

ABSTRACT

A Class II inspection was conducted at the Pennwalt inorganic chemical plant in Tacoma on April 5-6, 1988. Chlorine, caustic soda, hydrogen, muratic acid, and sodium chlorate are produced. Discharge from the plant is into the Hylebos waterway as allowed by NPDES Permit No. WA-000311-5. The discharge appeared to be in compliance with NPDES permit limits during the inspection. Priority pollutant scans found low concentrations of several chemicals in the liquid stream and several different chemicals at concentrations above proposed sediment standard criteria in the sediments. Bioassay tests found no significant toxicity in the Pennwalt discharge or the sediments.

INTRODUCTION

A Class II inspection was conducted at the Pennwalt inorganic chemical plant in Tacoma on April 5-6, 1988 (Figure 1). The plant produces chlorine using an osmotic membrane process, along with caustic soda, hydrogen, muratic acid, and sodium chlorate. Water use is primarily once through cooling water with some consumption in production. Approximately 80-90 percent of the water used is saltwater from the Hylebos Waterway and the remaining 10-20 percent is city water. Cooling water is discharged into the Hylebos Waterway as specified in NPDES Permit No. WA-000311-5. The plant has a separate sanitary system that discharges into the city sewer.

Waste cooling water treatment consists of pH adjustment. Collection lines from areas of the plant most prone to pH variances are monitored and can be routed to a neutralization tank as necessary. The neutralization tank system lacks a centralized monitoring station for the collection system sensors, thus it is difficult to analyze all portions of the network simultaneously. The neutralization tank and other areas of the plant drain to an outfall box. Facilities for final pH adjustment before discharge are provided in the outfall box.

Conducting the inspection were Carlos Ruiz and Marc Heffner of the Ecology Compliance Monitoring Section. Fred Wolf, Manager for Environmental Affairs, represented Pennwalt. The inspection was performed for Greg Cloud of the Ecology Southwest Regional Office.

Objectives of the inspection were:

1. Verify compliance with NPDES permit limits by collecting independent samples and performing independent analyses.
2. Determine sampling and analytical performance by collecting side-by-side samples with Pennwalt and splitting samples for analysis by Ecology and Pennwalt.
3. Characterize toxicity of the influent, effluent, and receiving water sediments by performing priority pollutant scans and bioassays.

4/5-6/88 Class II Inspection by WDOE of Pennwalt Facility.

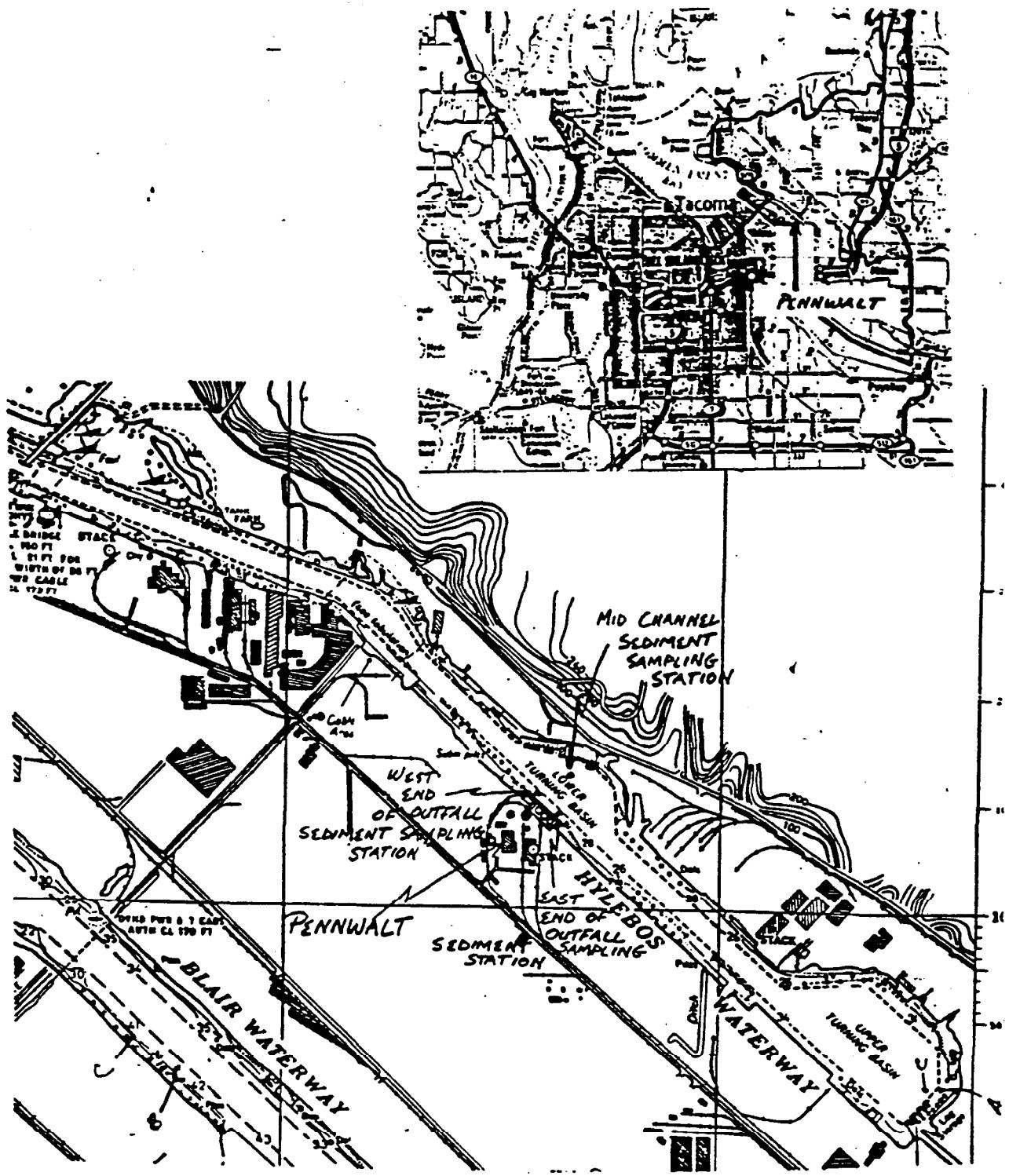


Figure 1. Site Location and Sediment Sampling Stations - Pennwalt, April 1988.

Table 8 - Continued

Pest/PCB Compound (µg/kg - dry wt.)	Mid-Channel	East End of Outfall	West End of Outfall	Method Blank	Proposed Options for No Observable Effect Concentration ^{aa}	
					New LAET	ACR RODC
4,4'-DDT	16.0 U	76 ^{**}	16.0 U	16.0 U	59	33 / total DDT
Heptachlor	80.0 U	165	80.0 U	80.0 U	57	37
Aroclor-1248	80.0 U	500 J	730 J	80.0 U	130	110 / sum of all PCB's
Aroclor-1234	590 J ^{**}	4600 J ^{**}	1800 J ^{**}	160.0 U		
Aroclor-1260	160.0 U	1500 J	1000 J	160.0 U		
 Priority Pollutant metals (µg/kg dry wt.)						
Antimony	0.1 U	0.2	0.3		150	20
Arsenic	129 ^{**}	145 ^{**}	127 ^{**}		57	57
Beryllium	0.5	0.5	0.5			
Cadmium	0.8	1.3 +	1.2 +		5.1	0.36
Chromium	28.1 +	35.8 +	41.4 +		260	27
Copper	224 +	381 +	223 +		390	130
Lead	142 +	231 +	138 +		450	66
Mercury	0.78 ^{**}	0.85 ^{**}	0.70 ^{**}		0.41	0.21
Nickel	44.1 +	51.3 +	46.4 +		140	14
Selenium	1.1	0.3	0.1 U			
Silver	0.85 +	0.62 +	0.22		5.9	0.39
Zinc	233 +	261 +	202 +		410	160

U - indicates compound was analysed for but not detected at the given detection limit.

J - indicates an estimated value when result is less than specified detection limit.

B - This flag is used when the analyte is found in the blank as well as the sample. Indicates possible/probable blank contamination.

H - indicates an estimated value of analyte found and confirmed by analyst but with low spectral match parameters.

aa - The New LAET are the New Lowest Apparent Effects Threshold values. The ACR RODC are the Acute to Chronic Ratio - No Observable Effects Concentration (Ecology, 1998).

* - sample concentration exceeds New LAET concentration

Appendix - Continued

Station Lab Log #/ Contract #	Mid- Channel 157905 1	East End of Outfall 157906 2	West End of Outfall 157907 3	Method Blank
Hexachlorobenzene	350 U	510	320 U	67 U
Pentachlorophenol	1700 U	1500 U	1600 U	330 U
Phenanthrene	920	1400	2700	33 U
Anthracene	430	510	430	33 U
Di-n-Butyl Phthalate	170 U	150 U	160 U	33 U
Fluoranthene	1200	4300	5800	33 U
Pyrene	2000	4500	6000	33 U
Benzidine	4300 U	3700 U	4000 U	830 U
Butylbenzylphthalate	170 U	150 U	160 U	33 U
3,3'-Dichlorobenzidine	1700 U	1500 U	1600 U	330 U
Benzo(a)Anthracene	970	3400	2600	33 U
Chrysene	2200	4800	3800	33 U
Bis(2-Ethylhexyl)phthalate	2200	1300	1500	33
Di-n-Octyl Phthalate	170 U	150 U	160 U	33 U
Benzo(b)Fluoranthene	3400	7100	5800	67 U
Benzo(k)Fluoranthene	3400	7100	5800	67 U
Benzo(a)Pyrene	970	2400	1700	67 U
Indeno(1,2,3-cd)Pyrene	450	1000	710	67 U
Dibenzo(a,h)Anthracene	350 U	290 U	320 U	67 U
Benzo(g,h,i)Perylene	500	750	690	67 U
<u>Pest/PCB Compound (ug/Kg dry wt)</u>				
alpha-BHC	8.0 U	8.0 U	8.0 U	8.0 U
beta-BHC	8.0 U	8.0 U	8.0 U	8.0 U
delta-BHC	8.0 U	8.0 U	8.0 U	8.0 U
gamma-BHC (Lindane)	8.0 U	8.0 U	8.0 U	8.0 U
Heptachlor	8.0 U	8.0 U	8.0 U	8.0 U
Aldrin	8.0 U	8.0 U	8.0 U	8.0 U
Heptachlor Epoxide	8.0 U	8.0 U	8.0 U	8.0 U
Endosulfan I	8.0 U	8.0 U	8.0 U	8.0 U
Dieldrin	16.0 U	16.0 U	16.0 U	16.0 U
4,4'-DDE	16.0 U	76	16.0 U	16.0 U
Endrin	16.0 U	16.0 U	16.0 U	16.0 U
Endosulfan II	16.0 U	16.0 U	16.0 U	16.0 U
4,4'-DDD	16.0 U	16.0 U	16.0 U	16.0 U
Endosulfan Sulfate	16.0 U	16.0 U	16.0 U	16.0 U
4,4'-DDT	16.0 U	16.0 U	16.0 U	16.0 U
Methoxychlor	80.0 U	165	80.0 U	80.0 U
Endrin Ketone	16.0 U	16.0 U	16.0 U	16.0 U
alpha-Chlordane	80.0 U	80.0 U	80.0 U	80.0 U
gamma-Chlordane	80.0 U	80.0 U	80.0 U	80.0 U
Toxaphene	160.0 U	160.0 U	160.0 U	160.0 U
Aroclor-1016	80.0 U	80.0 U	80.0 U	80.0 U
Aroclor-1221	80.0 U	80.0 U	80.0 U	80.0 U
Aroclor-1232	80.0 U	80.0 U	80.0 U	80.0 U
Aroclor-1242	80.0 U	80.0 U	80.0 U	80.0 U
Aroclor-1248	80.0 U	500	730	80.0 U
Aroclor-1254	590	4600	1800	160.0 U
Aroclor-1260	160.0 U	1500	1000	160.0 U
Endrin Aldehyde	16.0 U	16.0 U	16.0 U	16.0 U